

What Kind of Fruits and Vegetables

Generate Electricity?

Wǒ de Kē Xué Yán Jiū Tí Mù Shì Shí Me Shuǐ Guǒ Hé Shū Cài Kě Yǐ Fā Diàn
我的科学研究题目是什么水果和蔬菜可以发电？

PROBLEM Wǒ de Yán Jiū Wèn Tí Shì
我的研究问题是

What fruit or vegetable generates electricity best?

Shí Me Shuǐ Guǒ Huò Shū Cài Kě Yǐ Chǎn Shēng Zuì Hǎo de Diàn Néng
什么水果或蔬菜可以产生最好的电能？

I want to learn which vegetable or fruit can generate the most electricity. I'll try using sweet potatoes, potatoes, lemons, and oranges.

Wǒ Xiǎng Xué Xí Shí Me Shū Cài Huò Shuǐ Guǒ Kě Yǐ Chǎn Shēng Zuì Dà de Diàn Lì Wǒ Huì Cháng
我想学习什么蔬菜或水果可以产生最大的电力。我会尝

Shì Shǐ Yòng Hóng Shǔ Dì Guā Mǎ Líng Shǔ Tǔ Dòu Níng Méng Hé Chéng Zǐ
试使用红薯/地瓜，马铃薯/土豆，柠檬和橙子。

HYPOTHESIS Wǒ de Jiǎ Shè Shì
我的假设是

Each fruit or vegetable will conduct electricity. I think that the potato will conduct the most electricity.

Měi Yī Gè Shuǐ Guǒ Huò Shū Cài Kě Yǐ Dǎo Diàn Wǒ Rèn Wéi Mǎ Líng Shǔ Dǎo Zuì Duō Diàn Lì
每一个水果或蔬菜可以导电。我认为，马铃薯导最多电力。

MATERIALS Wǒ Yòng de Cǎi Liào Yǒu
我用的材料有

4 halves of sweet potatoes, 4 potatoes, 3 oranges, and 2 lemons

8 copper wires

An LED bulb

Alligator clips

A multimeter

4 ^{Gè} ^{Bàn} ^{Hóng} ^{Shǔ} ^{Dì} ^{Guā} 个半红薯/地瓜, 4 ^{Gè} ^{Mǎ} ^{Líng} ^{Shǔ} ^{Tǔ} ^{Dòu} 个马铃薯/土豆, 3 ^{Gè} ^{Chéng} ^{Zi} 个橙子, 2 ^{Gè} ^{Níng} 个柠

^{Méng}
檬

8 ^{Tiáo} ^{Tóng} ^{Xiàn} 条铜线

Yī ^{Gè} ^{Dēng} ^{Pào} 一个 LED 灯泡

È Yú Jiā Zǐ
鳄鱼夹子

Yī Gè Wàn Yòng Biǎo
一个万用表

WHAT I DID Wǒ Zuò le 我做了

Step 1: I connected wire from potato to potato and the light bulb.

Step 2: I connected wire from sweet potato to sweet potato and the light bulb.

Step 3: I connected wire from lemon to lemon and the light bulb.

Step 4: I connected wire from orange to orange and the wire.

Step 5: I combined 2 lemons and 4 sweet potatoes, wired them up to get a super battery.

Dì Bù Zhòu Yōng Tóng Xiàn Lián Jiē Mǎ Líng Shǔ Hé Dēng Pào
第 1 步骤：用铜线连接马铃薯和灯泡。

Dì Bù Zhòu Yōng Tóng Xiàn Lián Jiē Hóng Shǔ Shǔ Hé Dēng Pào
第 2 步骤：用铜线连接红薯薯和灯泡。

Dì Bù Zhòu Yōng Tóng Xiàn Lián Jiē Níng Méng Hé Dēng Pào
第 3 步骤：用铜线连接柠檬和灯泡。

Dì Bù Zhòu Yōng Tóng Xiàn Lián Jiē Chéng Zǐ Hé Dēng Pào
第 4 步骤：用铜线连接橙子和灯泡。

Dì Bù Zhòu Wǒ Yōng Tóng Xiàn Lián Jiē Liǎng Gè Níng Méng Hé 4 Gè Hóng Shǔ Jié Hé Qǐ
第 5 步骤：我用铜线连接两个柠檬和 4 个红薯，结合起

Lái Chéng Wéi Yì Gè Chāo Jí Diàn Chí
来，成为一个超级电池。

OBSERVATIONS Wǒ Guān Cè le
我观测了

I saw that each type of fruit or vegetable could light the LED, but I had to use at least 2 of each kind. I also found out that each fruit required less quantity than the potatoes.

Wǒ Kàn Dào Měi Zhǒng Shuǐ Guǒ Huò Shū Cài Dū Kě Yǐ Diǎn Liàng Dēng Pào Dàn Shì Wǒ Zhì
我看到每种水果或蔬菜都可以点亮 LED 灯泡，但是我至
Shǎo Shǐ Yòng Liǎng Gè Shuǐ Guǒ Huò Shū Cài Wǒ Huán Fā Xiàn Měi Yī Gè Shuǐ Guǒ Bǐ Mǎ
少使用两个水果或蔬菜。我还发现，每一个水果，比马
Líng Shǔ de Shù Liǎng Shǎo
铃薯的数量少。

CONCLUSION Wǒ de Jié Lùn Shì
我的结论是

So, each fruit or vegetable does generate electricity if you use more than one to form a battery. I found through my research that the sweet potato generates the most wattage. As a result, the light is brightest.

Suǒ Yǐ Rú Guǒ Nǐ Shǐ Yòng Yī Gè Shuǐ Guǒ Huò Shū Cài Yǐ Shàng Zǔ Chéng de Diàn Chí Dū Kě
所以，如果你使用一个水果或蔬菜以上组成的电池都可
Yǐ Fā Diàn Wǒ Tōng Guò Wǒ de Yán Jiū Fā Xiàn Hóng Shǔ Chǎn Shēng Zuì Dà de Diàn Lì / Wǎ Tè Shù
以发电。我通过我的研究发现，红薯产生最大的电力/瓦特数。
Yīn Cǐ Dēng Shì Zuì Liàng de
因此，灯是最亮的。

Observations			
	Wattage	Brightness	Comments
potatoes	3	2	I thought it would generate more wattage, had to add 2 more potatoes to light.
sweet potatoes	2.98	4	I thought it would make less light, had to slice 2 sweet potatoes to get enough wattage.
lemons	1.73	3	I thought that I'd have to use 3 lemons to power the LED, I only used 2.
oranges	2.34	3	I expected the oranges to generate less wattage, I only used 3.
sweet potatoes/lemons	4.71	5	I was shocked at how bright the LED shined with the combo battery.

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Brightness Scale

Liàng Dù Liáng Biǎo
亮度量表

- | | | |
|---|-----------------|----------------|
| 1 | Dim 暗 | ǎn |
| 2 | Good 好 | hǎo |
| 3 | Very Good 很好 | hěn hǎo |
| | Bright | |
| 4 | 明亮 | míng liàng |
| 5 | Very Bright 很光明 | hěn guāng míng |